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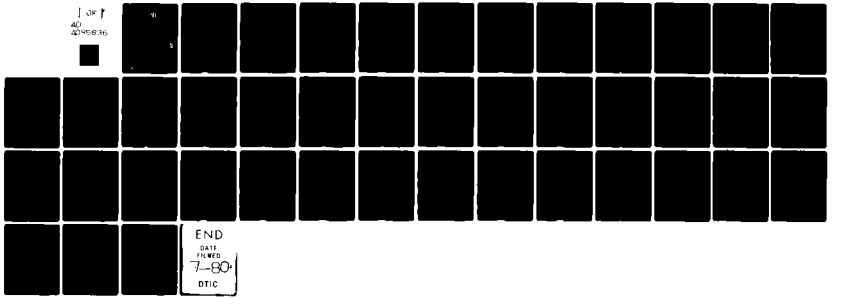
THE CCTC QUICK-REACTING GENERAL WAR GAMING SYSTEM (QUICK). USER--ETC(U)
JUN 77 D J SANDERS, P F MAYKRANTZ, J M HERRIN
UNCLASSIFIED CCTC-CSM-UM-9-77-VOL-2-CH NL



DEFENSE COMMUNICATIONS AGENCY
COMMAND AND CONTROL TECHNICAL CENTER
WASHINGTON, D. C. 20301

LEVEL II

IN REPLY REFER TO: C314

3 June 1980

TO: RECIPIENTS

SUBJECT: Change 3 to Users Manual CSM UM 9-77, Volume II, Weapon/Target Identification Subsystem

1. Insert the enclosed change pages and destroy the replaced pages according to applicable security regulations.

2. A list of Effective Pages to verify the accuracy of this manual is enclosed. This list should be inserted before the title page.

3. When this change has been posted, make an entry in the Record of Changes.

FOR THE DIRECTOR:

J. DOUGLAS POTTER
Assistant to the Director
for Administration

42 Enclosures
Change 3 Pages

EFFECTIVE PAGES - APRIL 1980

This list is used to verify the accuracy of CSM UM 9-77, Volume II after change 3 pages have been inserted. Original pages are indicated by the letter 0, change 1 pages by the numeral 1, change 2 pages by the numeral 2, and change 3 pages by the numeral 3.

Page No.	Change No.	Page No.	Change No.
Title Page	0	44-45	2
ii-vi	3	45.1	2
1	0	45.2-45.4	3
2	3	46-51	3
3	1	52	0
4	2	53-54	3
5	3		
6	1		
7	3		
8	1		
9	2		
9.1	2		
9.2	1		
10	0		
11	3		
12	0		
13	2		
14-16	0		
17	3		
18	1		
19-20	2		
21-24	0		
25-27	3		
28	1		
29-31	3		
32	0		
33	3		
34-35	2		
36	3		
36.1-36.2	3		
37	2		
38-40	0		
41	0		
42	2		
43	0		

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CONTENTS

ILLUSTRATIONS

ABSTRACT

The computerized Quick-Reacting General War Gaming System (QUICK) will accept input data, automatically generate global strategic nuclear war plans, provide output summaries, and produce input tapes to simulator subsystems external to QUICK. QUICK has been programmed in FORTRAN for use on the CCTC HIS 6000 computer system.

The QUICK Users Manual consists of four volumes: Volume I, Data Management Subsystem; Volume II, Weapon/Target Identification Subsystem; Volume III, Weapon Allocation Subsystem; Volume IV, Sortie Generation Subsystem. The Users Manual complements the other QUICK Computer System Manuals to facilitate application of the war gaming system. This volume, Volume II, provides detailed instructions for execution of the Weapon/Target Identification subsystem and the modules it comprises. Companion documents are:

a. PROGRAM MAINTENANCE MANUAL
   Computer System Manual CSM MM 9-77, Volume I
   Computer System Manual CSM MM 9-77, Volume II
   Computer System Manual CSM MM 9-77, Volume III
   Computer System Manual CSM MM 9-77, Volume IV
   Provides detailed instructions for maintenance of the system.

b. TECHNICAL MEMORANDUM
   Technical Memorandum TM 153-77
   Provides a nontechnical description of the system for senior management personnel.

SECTION 1. GENERAL

1.1 Purpose

This volume of the QUICK Users Manual is intended to inform the CCTC user/analyst on how to prepare control cards; structure execution (run) decks; prepare computer job requests; and understand the associated computer output, to include the recognition of error messages for the Weapon/Target Identification subsystem of QUICK. It complements information contained in the Maintenance Manuals on the QUICK System. The abstract of this document references other documents describing QUICK.

1.2 General Description

The Weapon/Target Identification subsystem of QUICK selects and processes the Red and/or Blue forces which are prespecified for a particular plan. The subsystem consists of modules JLM, DBMOD, INDEXER, and PLANSET, as shown in figure 1. Figure 2 shows the relationship of the Weapon/Target Identification subsystem to other QUICK subsystems in terms of procedural and information flow.

The modules of this subsystem are used to assemble selected target data from the CCTC JAD files, and reformat the data in a manner which is acceptable to QUICKs Integrated Data Base and to further develop a plan for allocation.

Modules within this subsystem are executed in the order of: JLM, DBMOD, INDEXER, and PLANSET. All modules perform updates to the Integrated Data Base; no other data files are used (other than internal temporary scratch files).

The first module, JLM, builds the target portion of the data base. Note that the remaining data base is created by modules within the Data Management subsystem. These modules may be executed at any stage of the entire QUICK processing, i.e., before or after INDEXER, etc. An order of module execution pertains only to modules not defined within the Data Management subsystem.

The next module normally run is DBMOD. Its primary purpose is to alter the content or characteristics of a data base to the specific scenario for which the plan is being developed, in accordance with prespecified user input.

Module INDEXER is designed to assign index numbers (attribute INDEXNO) and perform the task of forming complex targets.

Module PLANSET forms weapon groups, prepares the target list for the allocator, computes and normalizes the class value factors and calculates the representative attributes for complex targets.

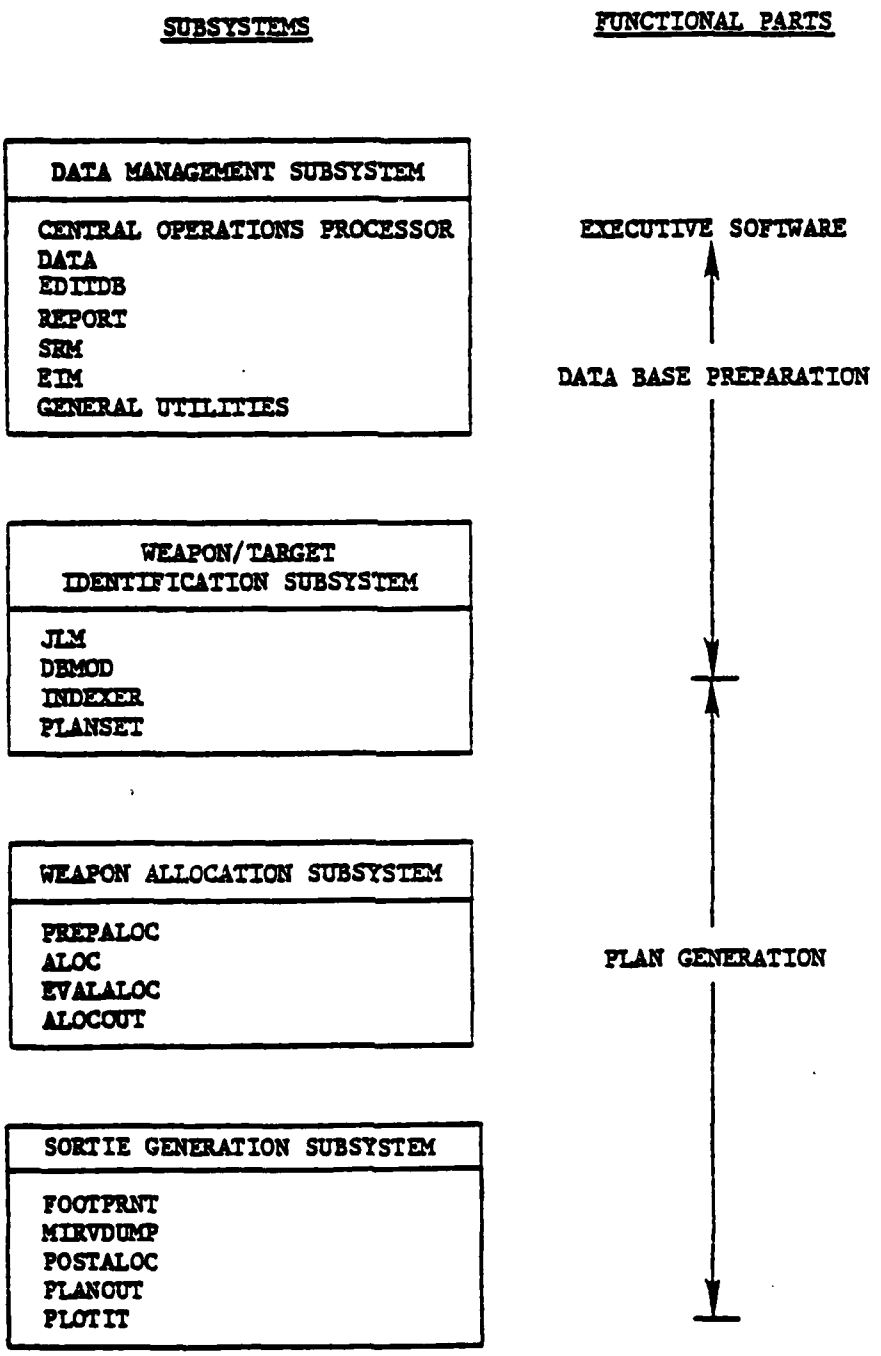


Figure 1. Major Subsystems of the QUICK System

CH-3

SECTION 2. JAD LOADING MODULE (JLM)

2.1 General Purpose

The function of the JLM is to build portions (targets) of the integrated data base by selecting records from a file that is in a JAD format. JLM operates in three modes. First, a section of the integrated data base called the Assignment table is built through user inputs. This table describes what sort of target is to be added to the data base and how it will be included. Second, given a completed Assignment table, the selection of JAD records is executed and a Damage Assessment tape is prepared for use in external processors. Third, after record selection, provisions are included for deleting individual records not required for QUICK processing. In the text English sense verbs ASSIGN, SELECT, and ASTERISK initiate the three JLM functions.

2.1.1 Assignment Table. The ASSIGN verb constructs the Assignment table which includes:

- The valid country code and what region and side the country is in;
- The target classes for each side;
- The section criteria for each target type based on category code, owner, location, and capacity or name;
- The SIOP table number (TASK) that corresponds to the target; and
- The list of DESIGs (alphabetic portion) that are to be used.

2.1.2 Selection Process. Using the developed Assignment table, the SELECT verb reads a JAD formatted file and stores target related data within the integrated data base. An option exists where additional target data may be included within a partially filled data base. There is, also, a second option that permits the automatic calculation for attributes TARDEFHI and TARDEFLO.

The user can bypass the construction of the Assignment table by using a BTL, BTB or DBASSES file in conjunction with the ORDER clause. The input file must contain a DESIG, target type, region and an index into the list of classes in the ORDER clause. The UNIT clause determines if this Bypass option is to be used.

In addition to storing target data within the integrated data base, the SELECT verb will generate a JAD format file which includes type, task, and DESIG information. This file will be used by the ASTERISK verb.

2.1.3 Finalized Output. The ASTERISK verb is used to finalize what target records are to be retained within the integrated data base and produce a Damage Assignment tape for input to processors external to the QUICK system.

The ASTERISK portion of the JLM uses the JAD formatted file provided by the SELECT verb and a list of DESIG ranges that specifies what target records are to be retained within the integrated data base. Any target whose DESIG does not fall within the ranges listed, is deleted. The Damage Assessment tape is produced and an asterisk added to the DESIG if the record is within the list.

2.2 Input

2.2.1 The ASSIGN Verb. The ASSIGN verb has two required adverbs (PLAYERS and ALPHAS) plus one optional adverb (ONPRINTS). PLAYERS, ALPHAS or both must be present. The ONPRINTS adverb will cause the region/country code and/or the Assignment to be printed.

2.2.1.1 The PLAYERS Adverb. This adverb creates or modifies a list of valid country codes and their associated region and side. The general form is:

ASSIGN PLAYERS side // region / country-code

[, country-code . . .] [side // region . . .]

The side must be first, the region must be preceded by two slashes and the list of country codes must be preceded by a single slash. For a given clause there may be more than one appearance of both the double and single slash symbols. If the double slash is repeated, a new region is being defined for the same side. A repeat of the single slash introduces countries for the most recent region (the last occurrence of a double slash) and the given side. Consider an example of the most complicated form:

ASSIGN PLAYERS BLUE//3/JA,TH//1/US RED//1/UR//3/CH

Country codes JA and TH are assigned to region 3 of side BLUE and US to region 1. UR is assigned to region 1 of side RED and CH to region 3. From this general example, a simpler example would be:

ASSIGN PLAYERS BLUE//3/JA

Care should be taken with the country codes since there are many short special words within the dictionary that are reserved for text English commands. Examples are AS, IN, and OR. If AS is a country code it can be defined with quotes around it, that is 'AS'. Generally it is always safe to place pronounceable country codes in quotes.

2.2.1.2 The ALPHAS Adverb. The ALPHAS clause builds the bulk of the assignment and is the most generalized. Consider the form:

ASSIGN ALPHAS side // class - type [≥ {minimum-capacity / name}]

/ low-catcode [- high-catcode] [* task] ,

desig-alphabetic [, alternate-desig . . .]

[[NOT] {OWNED BY / LOCATED IN} country-code [, country-code . . .]]

General comments are:

- o The side must be first.
- o The target class must be preceded by two slashes.
- o The target type must be preceded by a dash.
- o If minimum capacity or name is used, it must be preceded by a greater than symbol.
- o The lowest catcode must be preceded by one slash and if a range of catcodes are used the highest catcode is preceded by a dash.
- o Task is preceded by an asterisk and DESIG by a comma.
- o Country codes are preceded by either OWNED or IN if the assignment is restricted.

A simple form of the clause would be:

```
ASSIGN ALPHAS BLUE//MISSIL- 'MM-I'/11111*115,AD
```

This uses a MISSIL Class of type MM-I to be created on the BLUE side with a DESIG beginning in AD and a task of 115. Any target with a catcode of 11111 will be treated as an 'MM-I'. Note that MM-I is in quotes. Any name with '/', '-' or any other operator imbedded in it should be placed in quotes. A new class may be started at the double slash; a new type at the dash; and a new catcode at the single slash.

If the type has a range of contiguous category codes, the following is possible:

```
ASSIGN ALPHAS BLUE//MISSIL - 'MM-I'/10000-11000, AD*115
```

Note, also, the interchanging of DESIG and TASK inputs.

If more than one DESIG (alpha portion) is needed for some representation, alternates may be defined. Consider:

```
ASSIGN ALPHAS BLUE//BOMB - 'B52-H'/900-902*115, AB, AC
```

In this example, if there are an insufficient number of DESIGs beginning with AB, AC will be used for the overflow. There is no limit on the number of alternate DESIGs.

If the targets are to come from specific countries (say CA and UK) a command may be:

ASSIGN ALPHAS BLUE//BOMBER-B58/12555, AB*AA LOCATED IN CA, UK

Similarly assignments can be restricted based on ownership by replacing 'LOCATED IN' with 'OWNED BY'.

The operator 'NOT' negates a selection.

Different types can also be distinguished by the size (capacity) or name. For example:

ASSIGN ALPHAS BLUE//'U/I' - CITY > 100/77777, AA

This restricts the type CITY to catcodes 77777 and a capacity greater than 100.

2.2.2 The Select Verb. The use of the SELECT verb instructs the JLM to select records from the JAD format file according to the developed Assignment table. The SELECT command, including optional adverbs is:

SELECT [WHERE normal WHERE clause without OF or LIKE]

[UNIT value]

[ONPRINTS]

[REPLACING DUPLICATES] or [OMITTING DUPLICATES]

[ORDER class {class,class,. . .}][, side, input type]

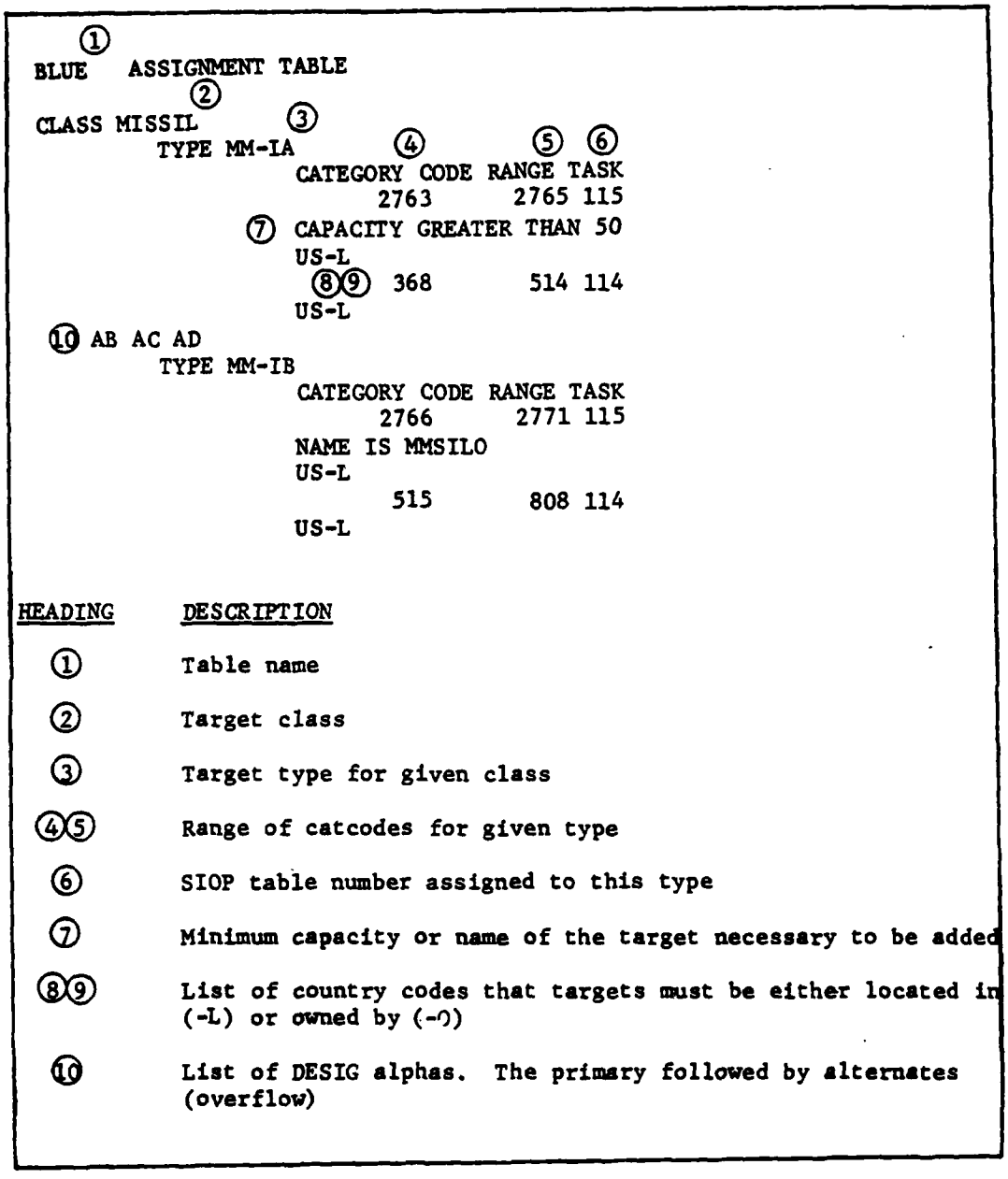
[SETTING TARDEF | EQUAL / = | ON]

The ONPRINTS adverb simply causes the print of the output JAD formatted file.

The WHERE clause is a generalized clause (see text English language section 3 of User Manual Volume I) and allows for enhanced selection from the input JAD. Any attribute within the integrated data base can be used. For example:

SELECT WHERE ACLASS = 'U/I' AND NOT NAME EQUAL MOSCOW

This command, in addition to the Assignment table selection, will select only U/I class targets that are not named MOSCOW. Within the game



HEADING	DESCRIPTION
①	Table name
②	Target class
③	Target type for given class
④⑤	Range of catcodes for given type
⑥	SIOP table number assigned to this type
⑦	Minimum capacity or name of the target necessary to be added
⑧⑨	List of country codes that targets must be either located in (-L) or owned by (-O)
⑩	List of DESIG alphas. The primary followed by alternates (overflow)

Figure 4. Assignment Table

COLS.	ITEM	USED	CREATED BY JLM
1-5	Category Code	*CATCODE	
6-9	WAC No.	*WACNO	
10-15	BE No.	*BENO	
16-20	Blank		
21-58	Name	*NAME (21-26)	
59-64	Major number	*MAJOR	
65-88	Complex Name		
89-94	Minor number	*MINOR	
95-118	Concentration Name		
119-125	Latitude DDMMSS N/S	*LAT	
126-133	Longitude DDDMMSS E/W	*LONG	
134-135	World Division		
136-137	Sub Div		
138-139	Country Location	*CNTRYLOC	
140-141	Special Region	*	
142-143	Region		
144-147	Blank		
148-149	Owner Country	*CNTRYOWN	
150-151	Agency or Service owner		
152-153	U & S Cmd or Supreme All		
154-155	Component or All Regn CMD		
156-159	Severe VN		
160-163	Moderate VN	*VULN1, VULN2	
164-167	Light VN		
168-171	Review Data yy mm		
172-175	ICOD yy mm		
176-190	Significance		
191-198	Capacity	*CAPACITY	
199-200	Data Source		
201-204	Units of measure		

Figure 5. JAD Format (Part 1 of 2)

26	TASK IS NON-ALPHABETIC OR MISSING (side) SIDE (class) CLASS (type) TYPE (low catcode)-(high catcode) The task is treated as alphabetic by the code and must be enclosed in quotes; there is an extraneous asterisk (*) imbedded in a name.
27	WARNING ASNREC CHANGED FOR COUNTRY (country-code) TYPE (type) CATRANGE (low-catcode high-catcode) TASK (task) FLAG (1,2,3) NEW CATRANGE (new-low-catcode new-high-catcode) The range of legal category ranges has been extended.
28	(side) IS NOT A VALID SIDE This side does not exist in the data base. Missing punctuation could cause this alphanumeric to be considered a side.
29	LOST LOOKING FOR NEXT SIDE (pointer input-value 1 or 2) An unexpected value has occurred in the input
30	COUNTRY CODE NON-ALPHABETIC OR MISSING (side) SIDE (class) CLASS (type) TYPE (low-catcode)-(high-catcode) Check for a country code at this location that is a special word or null.
31	INVALID MINIMUM CAPACITY -0 ASSUMED (side) SIDE (class) CLASS (type) TYPE The value following this greater than (>) is neither numeric nor alphabetic.
32	NO DESIGS WERE ASSIGNED (side) SIDE (class) CLASS (type) TYPE (low-catcode)-(high-catcode). No DESIGS were assigned to this type. If this is a new type problems will occur if SELECT is run before it is assigned a DESIG. See if the DESIG is a null.
33	WARNING-ATTEMPTING TO RECOVER This message explains that in spite of this preceding error an attempt is going to be made to continue processing.

Figure 6. (Part 4 of 5)

34 $$$ WARNING ALPHAS LOST BECAUSE OF (number 1 number 2) AT (location) ATTEMPTING TO FIND SOMETHING FAMILIAR LAST KNOWN VALUES WERE (side) SIDE (class) CLASS (type) TYPE (low-catcode)-(high-catcode)

This message shows where the input error occurred. The values are an aid to the maintenance programmer to find out what and where the error was. This message will be followed by one of the following two messages.

35 (number) WORDS SKIPPED IN ATTEMPT TO RECOVER

This message will provide the maintenance programmer with an idea of how much information was lost before a recovery could be made.

36 * UNABLE TO RECOVER - EXITING ALPHAS

The routine was never able to find anything familiar

37 (name) IS NOT A VALID PRINT REQUEST

Consult a maintenance programmer. Some unknown routine is attempting to use this routine.

38 (number) IS TOO MANY CLAUSES - ONLY FIRST SIX USED

Only six clauses can be in SELECT without being self-contradictory. Check input.

39 (number) IS AN ILLEGAL ADVERB NUMBER FOR SELECT

The only valid adverbs for SELECT are OMITTING, REPLACING, SETTING, UNIT, WHERE, ONPRINTS and ORDER.

40 ** WARNING - DESIG (DESIG) ALREADY EXISTS IN THE DATABASE IT IS BEING REPLACED BY @@ (number) THERE HAVE BEEN (number) DUPLICATES

The Bypass option is being used and the file contains a non unique DESIG.

41 ** ERROR ** NO HEADER FOR RECORD TYPE (type) WITH CLASS OF (class) ON SIDE (side)

The header record specified does not exist. The DBASSES tape with the Bypass option will produce the message for class 999999 normally.

Figure 6. (Part 5 of 5)

SECTION 4. MODULE INDEXER

After a scenario has been selected, module INDEXER performs necessary calculations and additions to the refined data base. The major objectives of INDEXER are to: (a) assign unique indices to all targetable records (referred to as index number, attribute INDEXNO); (b) automatically calculate time decaying value points for all target bomber and missile bases; (c) calculate for each unique target vulnerability a complexing lethal radius based on user selected yields; (d) complex individual targets based on selected algorithm; and (e) define the target complex classes.

User options pertain to the level used to create the output prints, the specification of weapon yields used in forming complexes, the performance of first time complexing logic, and the choice of saving complexing results on the data base.

Standard output prints will provide reports for: (a) lists of typename versus lowest index number for that type; (b) individual complex elements and the complex number in which they reside; and (c) a complete list of target vulnerabilities.

In the RECALC mode, module INDEXER has a checkpoint/restart capability. It determines when processing time allocated is about to expire, and halts the processing of complexes. This allows the user to batch INDEXER activities, followed by SRM save activities, to ensure minimum resource loss in the event of system failure.

4.1 Input

The verb INDEX directs the COP to execute module INDEXER. In addition, the verb may be followed by a maximum of three operational clauses. The general form of the command is:

INDEX [WITH (SIDE, YIELD) { = / EQUAL } (value, value)]

[ONPRINTS value, value] [VNOPTION] [RECALC]

Discussion of each optional clause follows.

4.1.1 The Optional WITH Clause. The WITH adverb precedes a phrase which indicates a particular yield for determining complexing lethal radii. The yield input units are in megatons. If the WITH clause is absent, complexing will be performed using a default value of 1 megaton.

4.1.2 The Optional VNOPTION Clause. VNOPTION permits the complexing to be done through the use of hard coded (see Program Maintenance Manual Volume II) critical distance tables. No other information is required with this clause.

The absence of this clause implies complexing with a single value of weapon yield (defined through the WITH clause) for all target elements. This clause permits complexing with various values of yields to be determined from the 'VNTK' portion of each target element. From the 'VNTK' value, a yield is obtained, then an adjusted VN calculated and from there parameters a complexing lethal radius for each target element is obtained.

4.1.3 The Optional ONPRINTS Clause. ONPRINTS 1 will produce the non-standard detailed complex print. ONPRINTS 2 indicates the initiation of complexing, as opposed to the resumption of complexing from the last checkpoint. It also causes the printing of the reports shown in figures 11 and 12 in the RECALC mode. ONPRINTS 3 should be used to save processing time if the results of complexing are not to be saved on the IDS data base (i.e. while in an iterative phase of complexing to determine the proper complexing yield).

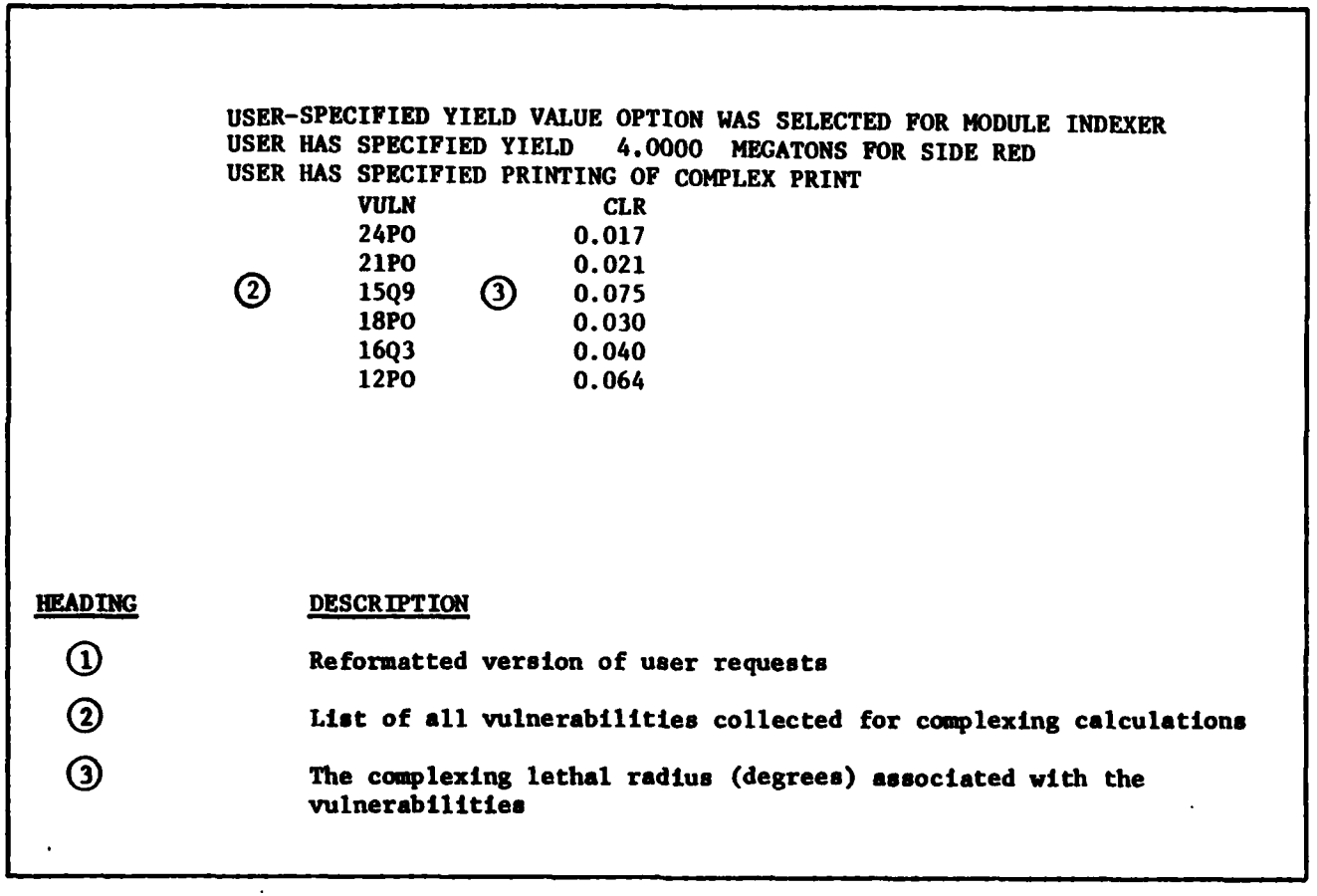
4.1.4 The Optional RECALC Clause. This adverb causes complexing of targets to be performed.

4.2 Output

There are two standard reports generated as shown in figures 11 and 12. Figure 11 information shows a reformatted version of user inputs plus a list of unique target vulnerabilities and their associated lethal radii used for complexing. Figure 12 lists all unique TYPE values for all targetable items. However, in the RECALC mode, if ONPRINTS 2 is not input, only the user inputs report is produced.

If the ONPRINTS adverb is included in the user inputs, detailed complexing (figure 13) data is printed. Each target element within a complex is printed supplying data as defined by the header. The last two lines of print summarizes the total number of complex collections and, also the total number of all target elements within all complexes.

The error messages detailed in figure 14 will be printed if problems arise in processing the data base.



USER-SPECIFIED YIELD VALUE OPTION WAS SELECTED FOR MODULE INDEXER
USER HAS SPECIFIED YIELD 4.0000 MEGATONS FOR SIDE RED
USER HAS SPECIFIED PRINTING OF COMPLEX PRINT

	VULN		CLR
	24PO		0.017
	21PO		0.021
②	15Q9	③	0.075
	18PO		0.030
	16Q3		0.040
	12PO		0.064

HEADING	DESCRIPTION
①	Reformatted version of user requests
②	List of all vulnerabilities collected for complexing calculations
③	The complexing lethal radius (degrees) associated with the vulnerabilities

Figure 11. Target Formation Control Summary

① PLANTYPE	② TYPENAME	③ INDBEG
1	TITAN	1
2	POSEID	85
3	POL-A3	94
4	POL-A2	118
5	MM-III	130
6	MM-II	280
7	MM-I6	680
8	MM-IA	980
9	SS-9	1130
10	SS-8	1670
11	SS-7	1790
12	SS-6	2030
13	N-5	2078
14	N-3	2090
15	B-52E	2096
16	F-111	2119
17	F-111B	2122
18	B-58	2124
19	B-52H	2126
20	B-52G	2136

HEADING	DESCRIPTION
①	Sequential counter
②	Attribute TYPE
③	The lowest index number (attribute INDEXNO) for the corresponding TYPE

Figure 12. INDEXNO Breakpoint Table

ICOMPLEX	INDEXNO	TGTNAME	TASK	DESIG	LAT	LONG	VALUE
	1	2880	LUNGCH	AB804	24.6100	242.3600	11.0000
①	1	2312	LUNGCH	AB819	24.6100	242.3600	3.0000
	2	2881	SHANGH	AB805	31.3800	238.4700	11.0000
	2	2316	SHANGH	AB823	31.3800	238.4700	3.0000
	3	2307	DAIREN	AB814	38.9700	238.5400	3.0000
	3	2878	DAIREN	AB802	38.9700	238.5400	11.0000
	4	2234	PYONGY	AB834	39.0100	234.2100	3.0000
	4	2364	PYONGY	AB810	39.0000	234.2000	3.0000
	5	2233	PEKING	AB833	39.9200	243.5900	3.0000
	5	2363	PEKING	AB809	39.9000	243.6000	3.0000
	6	2882	TA-PAO	AB806	40.5700	235.6900	11.0000
	6	2317	TA-PAO	AB824	40.5700	235.6900	3.0000

② 40 COMPLEX TARGETS

③ 84 ELEMENTS OF COMPLEXES

HEADING	DESCRIPTION
①	Typical data for each complex target element
②	Total number of complexes formed (cumulative for all restarts)
③	Total number of elements within complexes for this execution of INDEXER (not cumulative for restarts)

Figure 13. Target Complex Summary

1 MODULE INDEXER CALLED WITH VERB EQUAL TO (I6)

INDEXER was called with the wrong verb, check inputs.

2 MODULE INDEXER cannot recognize adverb (I6)

INDEXER was called with an improper adverb, check inputs. The adverb will be ignored.

3 MODULE INDEXER ENCOUNTERED ERRONEOUS SECOND (A8) ADVERB. THE FIRST (A8) ADVERB WAS USED.

INDEXER was called and its command contained more than one WITH or ONPRINTS clause. The first entry is accepted; any following are ignored.

4 MODULE INDEXER ENCOUNTERED UNKNOWN INPUT ATTRIBUTE (I8)

INDEXER encountered an unknown input attribute while processing a WITH or ONPRINTS clause. The entire WITH or ONPRINTS clause is ignored and processing continues.

5 MODULE INDEXER ENCOUNTERED INPUT SIDE ERROR. SIDE IS (A6)

INDEXER received a SIDE value which was neither the attacking nor defending side. Processing continues using default values.

6 NO. OF DATA BASE VULNS EXCEED MAX. LAST VULN READ: (A6)

There are more than 255 unique vulnerabilities defined in the data base. Excess entries are ignored and processing continues.

7 MODULE INDEXER FAILED TO FIND TGTHD RECORD ON RCTYP CHAIN. PROGRAM ABORTED.

Targets cannot be located within data base. Consult maintenance programmer.

8 MODULE INDEXER FOUND MORE THAN MAX CLASSES ON SIDE (A6) CLASS (A6) IGNORED

More than 15 target classes were found for the side indicated. The last class found is ignored and processing continues. Consult a maintenance programmer.

9 MORE THAN (I8) TARGETS IN COMPLEX (I8)

More than 99 targets were found for the complex indicated. The program examines the excess target to see if it belongs in another complex. No action by user is necessary.

Figure 14. INDEXER Error Message (Part 1 of 2)

10	MODULE INDEXER: MORE THAN MAX TYPES IN CLASS (A6) More than 100 types were found in the class indicated. Excess types are ignored and processing continues.
11	SUBROUTINE SETVAL OF MODULE INDEXER COULD NOT FIND TYPE (A7) WHILE CHAINING WEAPON RECORDS The weapon record of a missile or bomber could not be found. Processing continues. Consult a maintenance programmer.
12	MODULE INDEXER ENCOUNTERED INVALID ONPRINTS VALUE: (I6) A value of other than 1, 2 or 3 was input along with ONPRINTS.

Figure 14. (Part 2 of 2)

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SECTION 5. MODULE PLANSET

Module PLANSET is logically executed after complexing and the assigning of index numbers. At this juncture within the QUICK system, the user selects weapon systems and targets. It is from this selection that the QUICK ALLOCATOR optionally makes assignments of weapons to targets. Necessary objectives of PLANSET, then include:

- The selection of target classes and the specification of relative target values of the selected class to other classes;
- The reordering, if user directed, of target elements within complexes;
- The selection of missile, bomber, and tanker systems;
- The forming of weapon groups based on the selected weapon systems according to existing algorithms or user specified parameters;
- The definition for command and control reliability;
- The provision of standard prints of selected weapon system characteristics, weapon groups formed, and lists of target related data.

5.1 Inputs

The execution of PLANSET, as with all modules, has the verb followed by required adverbs. The verb and adverbs are:

- PLANSET - The verb that causes execution
- SETTING - The adverb which introduces a clause to set various parameters
- PRIORITY - The adverb which introduces a clause to set criteria for choosing representative targets of complexes
- ATTACKERS - The adverb which introduces a clause to select weapon system inventory
- DEFENDERS - The adverb which introduces a clause to select target classes.
- ONPRINTS - Suppresses various calculations.

Also the attribute GRPFLG may be used to control weapon grouping.

The general form of PLANSETs command is:

PLANSET [SETTING [RANGEMOD {=, EQUAL} value]
[CCREL {=, EQUAL} [value AND value . . .]]
[RETARGET {=, EQUAL} YES]]
[PRIORITY {TASK, DESIG} (value, value . . .)]
ATTACKERS (value, value . . .)
DEFENDERS (DESIG , VALUE) {=, EQUAL}
(desig, value) [AND (desig, value) . . .]
[ONPRINTS value value value . . .]

Discussion of each clause follows.

5.1.1 SETTING Clause. The SETTING adverb is followed by data required to define related module parameters. This clause sets the following:

- The RANGEMOD phrase is used to determine how far away a weapon site can be from a group centroid and still be included in the group. The value given to RANGEMOD is that fraction of the weapon's range that will be the maximum distance from the group centroid that a site can be and still be in the group. This phrase is optional. If it is not included the default value of .15 is used. A RANGEMOD of .2 would be entered as:

  RANGEMOD = .2

  Thus, if a weapon has a range of 1,000 miles, the maximum distance from the group geographic centroid and any base is 200 miles for alert weapons, 400 miles for nonalert weapons.

- The CCREL phrase is followed by values giving the Command and Control Reliability for each region. The order of CCREL placements determines the region to which it refers. For example, if the CCREL for Region 1 is .95 but for 2 and 3 it is .85, the input would be:

CCREL EQUAL .95 AND .85 AND .85

If for all regions, CCREL = 1, no inputs are required for this is the assumed default value; else entries must be input for each region.

- o The RETARGET phrase is optional, and, if included, will allow the reprogramming of missiles.

RETARGET EQUAL YES

will cause the reprogramming option to be used.

An example of the entire SETTING clause would be:

SETTING RANGEMOD=.1 CCREL=.93 AND .22 AND .53
RETARGET = YES

5.1.2 PRIORITY Clause. The priority clause is used to set up criteria for choosing the representative target for a complex. The choice is based on the alpha portion of the target DESIG. The PRIORITY clause consists of the word DESIG and the ordered list of alpha-portion of desigs. *DESIG priorities would be set with:*

PRIORITY DESIG (FA, AB, BC)

5.1.3 ATTACKERS Clause. The ATTACKERS clause consists of the adverb ATTACKERS and a list of the attacking weapons and tankers by TYPE. An example of an ATTACKERS clause would be:

ATTACKERS ('MM-III', 'B-52G', 'KC-135', 'F-III')

Weapon groups will be formulated in the same order as types are supplied within this clause.

5.1.4 DEFENDERS Clause. The DEFENDERS clause consists of the attributes (DESIG, VALUE) and a series of DESIGs of the exemplar target for each class of target being attacked paired with the new value of that exemplar target. If five target classes were to be included in the game and the targets with DESIGs of *AB714, FA647, CA614, AL519, CT098* are the exemplar targets for these classes, the DEFENDERS clause might look like:

DEFENDERS(DESIGN,VALUE)EQUAL(AB714,1.3)AND(FA647,41.)AND
(CA614,.4)AND(AL519,6.8)AND(CT098,4.6)

5.1.5 ONPRINTS Clause. The appearance of this clause permits the user to control certain calculations standardly performed by PLANSET. Any series of up to six numbers (values from 1 to 6) separated by blank(s)

may appear after the ONPRINTS adverb. The presence of each number implies:

- =1; Suppress the DESIG/Number Directory Print.
- =2; Suppress the Target/Complex print.
- =3; Suppress weapon group formulation.
- =4; Renormalize target value, nothing else. This feature permimits the execution of PLANSET after PREPALOC has been executed.
- =5; Suppress the FLAG/DESIG print.
- =6; Form weapon groups, nothing else.

5.1.6 Attribute GRPFLG and Settings. Indicate whether a given weapon is to group according to PLANSETs algorithm (A), whether the weapon is to group alone (B), whether the weapon is to group with weapons possessing the same flag value.

(A) GRPFLG = 0
(B) GRPFLG = 1
(C) GRPFLG = 2-99

The attribute GRPFLG should be set via the data module with a change verb using DESIG as the search argument.

5.2 Output

5.2.1 Standard Output. All PLANSET prints are standard output. Hence, tables to follow illustrate all of the printouts. A summary of each output follows.

- **Figure 15 -- User input information**
- **Figure 16 -- Selected target class value summaries**
- **Figure 17 -- Prints of all DESIGs that are common to attribute FLAG**
- **Figure 18 -- Target print of all elements selected by the user; print is in DESIG sort order**
- **Figure 19 -- Warhead table print**
- **Figure 20 -- Air-to-surface missile table print**
- **Figure 21 -- Payload table which is used to describe the numbers and types (attribute TYPE) that are transported by various delivery vehicles**
- **Figure 22 -- Selected weapon systems are printed**

- Figure 23 -- Print of weapon groups
- Figure 23.1 -- Print of missile weapon systems characteristics
- Figure 23.2 -- Print of bomber weapon systems characteristics
- Figure 24 -- For each weapon group formed by PLANSET, this print summarizes all launch bases included within the group
- Figure 25 -- Print of each target elements selected
- Figure 26 -- Print of target complex data

5.2.2 PLANSET Error Messages. The error messages for PLANSET are shown in figure 27.

5.3 Module DATAMAKE

It is possible to override all of the functions of DBMOD, INDEXER, PLANSET, and PREPALOC with one module called DATAMAKE. This module will accept a database containing targets and permit the user to directly input weapon groups and immediately perform an allocation. The general command form is:

DATAMAKE SETTING (attributes)

PRIORITY DESIG (value, value . . .)

DEFENDERS (DESIG, VALUE) $\overset{=}{\text{EQUAL}}$

(desig, value) AND (desig, value) . . .

WITH (SIDE, YIELD) $\overset{=}{\text{EQUAL}}$ (value, value)

ONPRINTS VNOPTION

Clauses WITH, ONPRINTS, and VNOPTION are identically as used for verb INDEX and clauses PRIORITY and DEFENDERS are as described for verb PLANSET. The SETTING clause introduces a method of defining necessary global attributes (ASIDE, DSIDE, INITSTRK, CORMSL, or CORBOMB) plus each desired weapon group. Weapon bases are not defined; only the attributes needed for each individual group. The weapon group attributes are:

- o GTYPE - Name of the weapon system
- o PAYTBLNM - Payload table name
- o GNWPNS - Number of weapons
- o GLAT - Latitude
- o GLONG - Longitude
- o IREG - Region
- o IALERT - Alert status
- o GSBL - Probability of launch survival
- o PENPROB - If a bomber group, probability bomber will survive penetration
- o GREFCODE - Refuel code

Note that prior to these weapon group settings, the various payload, warhead, and weapon type systems much have been defined. Also be aware that no corridor geography is used. Standard prints are the same as outlined for PLANSET.

① WEAPON SYSTEM CHARACTERISTICS -- MISSILES

② DEL SYSTEM	③ LCH REL	④ FLT REL	⑤ W/H REL	⑥ SYS REL	⑦ LAUNCH INTERVAL	⑧ NO WHDS	⑨ WARHEAD TYPE	⑩ YIELD (MT)	⑪ FIS FRAC	⑫ MINIMUM RNG(NM)	⑬ MINIMUM CEP(NM)	⑭ MINIMUM TOF	⑮ MAXIMUM RNG(NM)	⑯ MAXIMUM CEP(NM)
POL-A2	0.88	0.90	0.98	0.60	1-0 MIN	3MRV	MK-12	0.20	0.705	0.	0.	0.0	1500.	1.000
MM-111	0.92	0.95	0.98	0.79	1-0 MIN	3MIRV	MK-17	0.15	0.700	0.	0.	0.0	6300.	0.600

READING	DESCRIPTION
①	NAME OF TABLE
②	WEAPON TYPE - Weapon systems with no payload will not be listed
③	1 - PROBABILITY OF LAUNCH ABORT
④	1 - PROBABILITY OF FAILURE DURING POWERED FLIGHT
⑤	1 - PROBABILITY OF WARHEAD FAILING TO DETONATE
⑥	RELIABILITY
⑦	LAUNCH INTERVAL IN MINUTES OR SECONDS
⑧	NO. OF WARHEADS, IF > 1 WARHEAD CLASS IS INDICATED
⑨	WARHEAD TYPE
⑩	YIELD (MEGATONS)
⑪	FISSION FRACTION
⑫	MINIMUM RANGE FOR MISSILE TYPES
⑬	CEP FOR MISSILE AT MINIMUM RANGE
⑭	MINIMUM FLIGHT TIME FOR MISSILE TYPES
⑮	VEHICLE RANGE
⑯	CEP FOR MISSILE AT MAX RANGE

Figure 23.1. Weapon System Characteristics-Missiles

① WEAPON SYSTEM CHARACTERISTICS -- BOMBERS

② DEL SYSTEM	③ ④ WEAPONS PER ACFT	⑤ WARHEAD TYPE	⑥ YIELD (MT)	⑦ FIS FRAC	⑧ MAX RANGE(NM)	⑨ WEAPON SYS REL	⑩ --SPEED HIGH ALT	⑪ (KNOTS)-- LOW ALT	⑫ CEP (NM)
B-526	2 HNDDOG		1.50	0.700	8200.	0.90	485.	270.	0.500

PLANSET: NBOMB = 84 NTANK = 720

HEADING	DESCRIPTION
①	NAME OF TABLE
②	WEAPON TYPE - Weapon systems with no payload will not be listed
③	NUMBER OF WARHEADS OF A TYPE
④	TYPE (IF CLASS ON WARHD RECORD = "ASM"
⑤	WARHEAD TYPE (IF CLASS ON WARHD RECORD NOT = "ASM"
⑥	YIELD (MEGATONS)
⑦	FISSION FRACTION
⑧	VEHICLE RANGE
⑨	RELIABILITY
⑩	SPEED (KNOTS)
⑪	SPEED AT LOW ALTITUDE (KNOTS)
⑫	CEP

Figure 23.2. Weapon System Characteristics-Bombers

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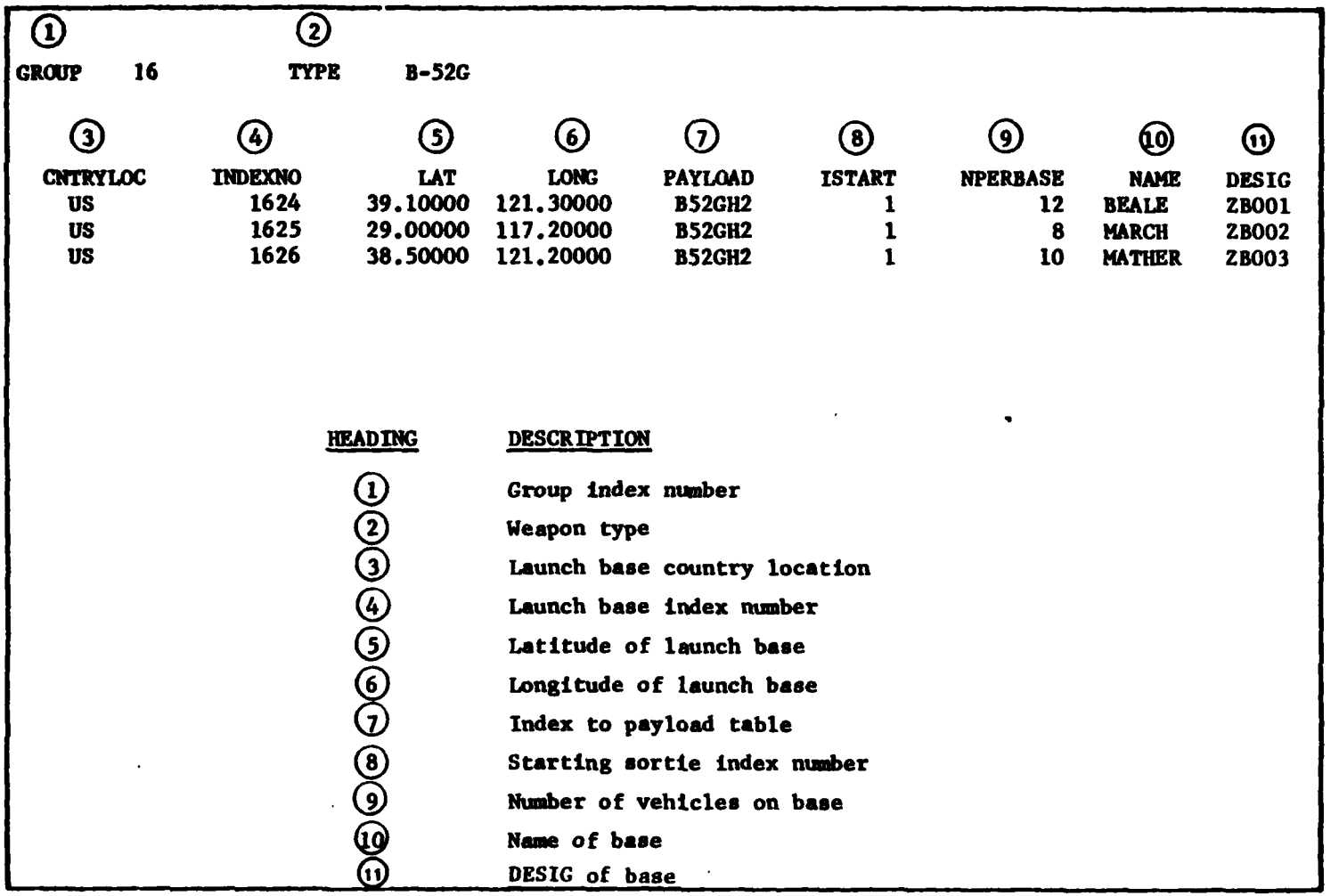


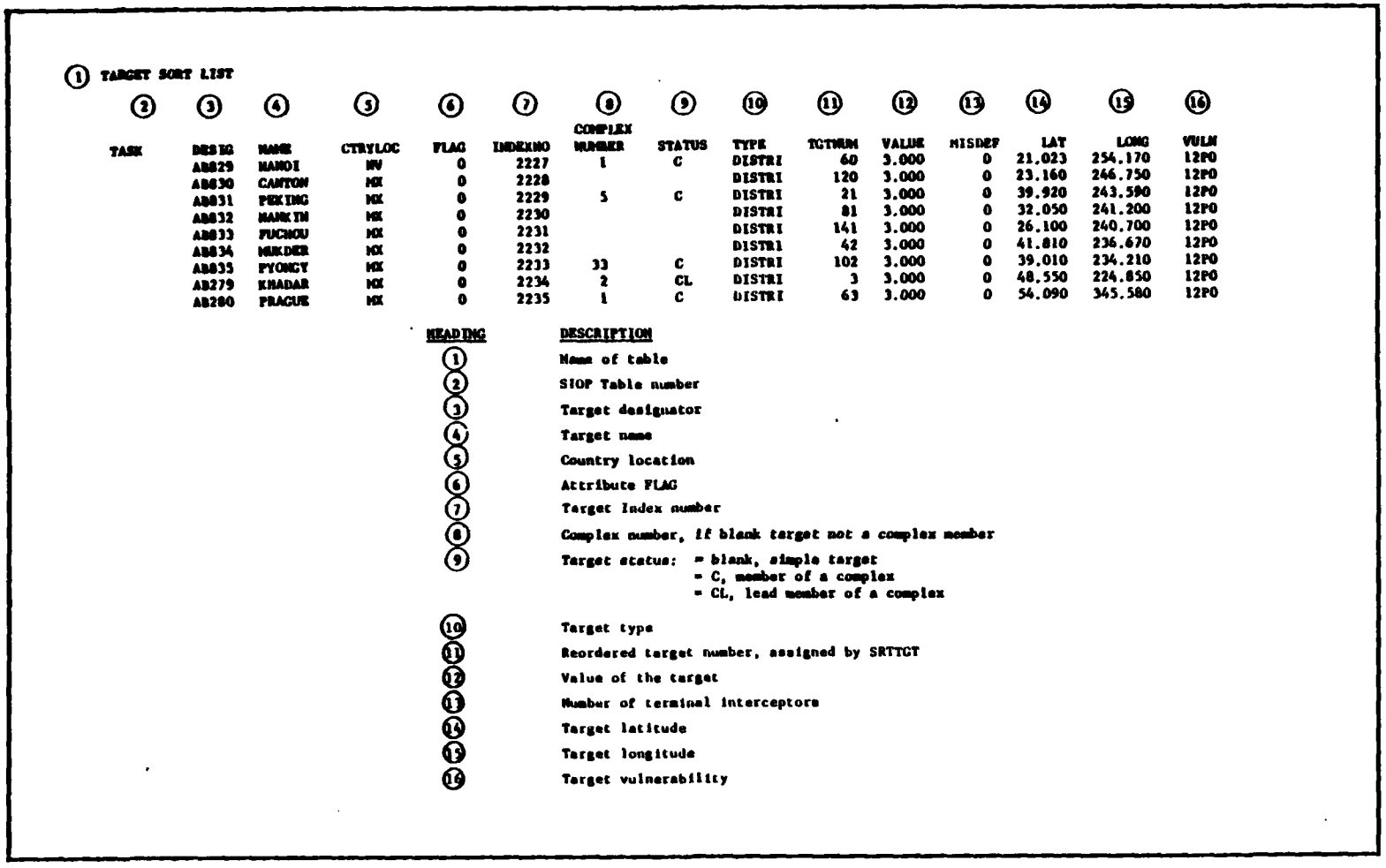
① ②

GROUP 16 TYPE B-52G

③ CNTRYLOC	④ INDEXNO	⑤ LAT	⑥ LONG	⑦ PAYLOAD	⑧ ISTART	⑨ NPERBASE	⑩ NAME	⑪ DESIG
US	1624	39.10000	121.30000	B52GH2	1	12	BEALE	ZB001
US	1625	29.00000	117.20000	B52GH2	1	8	MARCH	ZB002
US	1626	38.50000	121.20000	B52GH2	1	10	MATHER	ZB003

HEADING	DESCRIPTION
①	Group index number
②	Weapon type
③	Launch base country location
④	Launch base index number
⑤	Latitude of launch base
⑥	Longitude of launch base
⑦	Index to payload table
⑧	Starting sortie index number
⑨	Number of vehicles on base
⑩	Name of base
⑪	DESIG of base

Figure 24. Weapon Group Launch Base Print Option



① TARGET SORT LIST

② TASK	③ DESIG	④ NAME	⑤ CTRYLOC	⑥ FLAG	⑦ INDEXNO	⑧ COMPLEX NUMBER	⑨ STATUS	⑩ TYPE	⑪ TGTNUM	⑫ VALUE	⑬ MISDEF	⑭ LAT	⑮ LONG	⑯ VULN
	AB829	HANOI	NV	0	2227	1	C	DISTRI	60	3.000	0	21.023	254.170	12P0
	AB830	CANTON	NK	0	2228			DISTRI	120	3.000	0	23.160	246.750	12P0
	AB831	PEKING	NK	0	2229	5	C	DISTRI	21	3.000	0	39.920	243.590	12P0
	AB832	NANKIN	NK	0	2230			DISTRI	81	3.000	0	32.050	241.200	12P0
	AB833	FUCHOU	NK	0	2231			DISTRI	141	3.000	0	26.100	240.700	12P0
	AB834	MUKDEN	NK	0	2232			DISTRI	42	3.000	0	41.810	236.670	12P0
	AB835	PYONGY	NK	0	2233	33	C	DISTRI	102	3.000	0	39.010	234.210	12P0
	AB279	KHADAR	NK	0	2234	2	CL	DISTRI	3	3.000	0	48.550	224.850	12P0
	AB280	PRAGUE	NK	0	2235	1	C	DISTRI	63	3.000	0	54.090	345.580	12P0

HEADING	DESCRIPTION
①	Name of table
②	SIOP Table number
③	Target designator
④	Target name
⑤	Country location
⑥	Attribute FLAG
⑦	Target Index number
⑧	Complex number, if blank target not a complex member
⑨	Target status: = blank, simple target = C, member of a complex = CL, lead member of a complex
⑩	Target type
⑪	Reordered target number, assigned by SRTTGT
⑫	Value of the target
⑬	Number of terminal interceptors
⑭	Target latitude
⑮	Target longitude
⑯	Target vulnerability

Figure 25. Target List Print

① COMPLEX TARGET LISTING

ICOMPLEX	INDEXNO	NAME	TASK-ST	DESIG	SIDE	CLASS	TYPE	LAT	LONG	VULN
4	2233	PYONGY		AB835	RED	DEFCON	DISTRI	39.010	234.210	12P0
4	2365	PYONGY		AB308	RED	C/C	NATION	39.000	234.200	12Q9
5	2229	PEKING		AB831	RED	DEFCON	DISTRI	39.920	243.590	12P0
5	2364	PEKING		AB307	RED	C/C	NATION	39.900	243.600	15Q9
12	2743	KHABAR		BD223	RED	U/I	RCITY	48.600	224.800	12P0
12	2234	KHABAR		AB279	RED	DEFCON	DISTRI	48.550	224.850	12P0
13	2227	HANOI		AB829	RED	DEFCON	DISTRI	21.020	254.170	12P0
13	2363	HANOI		AB306	RED	C/C	NATION	21.010	254.170	15Q9

② →

HEADING	DESCRIPTION
①	Table name
②	Self explanatory target data. The first target for each complex is the representative target of the complex.

Figure 26. Complex Target Data Print

1	MODULE PLANSET CALLED WITH VERB EQUAL TO (012) PLANSET was called with incorrect verb, processing terminates.
2	MODULE PLANSET CALLED WITH NO INPUT PARAMETERS Check inputs, there are none.
3	MODULE PLANSET CANNOT DETERMINE ADVERB (012) Probably an input spelling error, recheck.
4	MODULE PLANSET: NO. OF CCREL PARAMETERS EXCEED MAX There are only 20 entries allowed for command and control reliabilities.
5	MODULE PLANSET: NO. OF SELECTED DESIGS EXCEEDS MAX There are only 200 entries allowed for alpha-portions of DESIG for complexing.
6	MODULE PLANSET: NO OF SELECTED TASKS EXCEEDS MAX There are only 48 entries allowed for TASK for complexing.
7	MODULE PLANSET: NO. OF SELECTED WEAPON SYSTEMS EXCEED MAX There are only 100 entries allowed for selected weapon systems.
8	NO MATCH FOR TASK AND DESIG PLANSET failed to find a new representative target using the TASK and DESIG PRIORITY inputs. First target in complex will become representative; no action necessary.
9	CANNOT FIND WEAPON TYPE (A6) PLANSET could not find a user supplied type. Check ATTACKERS weapon clause spelling.
10	TANKER DATA BASE ERROR AT DESIG (A6) IREFUEL (I6) PLANSET encountered a tanker base with IREFUEL greater than -4 but less than 0. Processing continues, call maintenance programmer.
11	MORE THAN (I5) WEAPON GROUPS PLANSET formed the maximum number of weapon groups allowed and tried to form an additional one. Weapon site being processed at the time was ignored. Consult a maintenance programmer.

Figure 27. PLANSET Error Messages

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20. ABSTRACT (continue on reverse side if necessary and identify by block number)

The computerized Quick-Reacting General War Gaming System (QUICK) will accept input data, automatically generate global strategic nuclear war plans, provide statistical output summaries, and produce input tapes to simulator subsystems external to QUICK.

The Users Manual consists of four volumes which are intended for the user/analyst who is concerned with preparing the data base for a war game, selecting

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20. ABSTRACT (CONT'D)
optional features of QUICK, designating control parameters, submitting computer jobs, and analyzing computer output. This volume, Volume II, provides detailed instructions for execution of the Weapon/Target Identification Subsystem and the modules it comprises.

The Users Manual complements the other QUICK Computer Manuals to facilitate application of the war gaming system. These manuals (Series 9-77) are published by the Command and Control Technical Center (CCTC), Defense Communications Agency (DCA), The Pentagon, Washington, DC 20301.